भारतीय मानक

Indian Standard

IS 189 : 2022

वस्त्र प्रसंस्करण सहायक सामग्री — सूती एवं पटसन वस्त्र उद्योगो में प्रयोग के लिये इमली की गुठली का चूरा — विशिष्टि

(तीसरा पुनरीक्षण)

Textile Auxiliaries — Tamarind Kernel Powder for Use in Cotton and Jute Textile Industries — Specification

(Third Revision)

ICS 59.040

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भारतीय मानक ब्यूरो
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October 2022 **Price Group 7**

Textile Speciality Chemicals and Dyestuffs Sectional Committee, TXD 07

FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Textile Speciality Chemicals and Dyestuffs Sectional Committee had been approved by the Textiles Division Council.

Tamarind Kernel Powder is a natural polymer that has outstanding water absorption properties and high viscosity. It has the excellent property of high water absorption and the solutions derived from it can well retain the viscosity over a broad range of *p*H. When heated with water it forms a thick, viscous, and colloidal dispersion that produces strong, transparent, and elastic films on evaporating.

In textile industry it is used as sizing material and thickener. Tamarind Kernel Powder acts as an important ingredient of the paste while imparting plasticity to the printing paste which helps in the dye to not spread across even under high-pressure conditions. The compounds of high molecular weight in it have the capability of turning into a vicious paste in water to hold all the dye particles in their desired place until the fixation of the dye is complete. Moreover, this is an economical alternative as it has the unique property of high viscosity at a low concentration which makes it a cost-effective additive in dispersal printing on polyester fabrics.

This standard was first published in 1951 which covered requirements of tamarind kernel powder (TKP) for cotton industries. This standard was subsequently revised in 1956 to include the requirements of odour, moisture content and adulterants of TKP; and again revised in 1977 to amalgamate IS 189 : 1956 and IS 511 : 1962 (tamarind kernel powder for jute industries). After which IS 511 : 1962 stands withdrawn.

The present revision has been made in the light of experience gained since last revision and to incorporate the following major changes:

a) Title of the standard has been modified;
b) Amendments issued have been incorporated;
c) Temperature for measuring viscosity has been specified;
d) Packaging and sampling clauses have been modified;
e) BIS certification marking clause has been modified; and
f) References to Indian Standard given in Annex A has been updated.

The composition of the Committee responsible for the formulation of this standard is given in Annex C.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard
TEXTILE AUXILIARIES — TAMARIND KERNEL POWDER FOR USE IN COTTON AND JUTE TEXTILE INDUSTRIES — SPECIFICATION
(Third Revision)

1 SCOPE

This standard prescribes the requirements of two grades of tamarind kernel powder used as sizing materials in cotton and jute textile industry.

2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

3 TYPES

The tamarind kernel powder shall be classified in two grades based on its applications:

a) *Grade 1* — Tamarind kernel powder used in Cotton textile industry.
b) *Grade 2* — Tamarind kernel powder used in Jute textile industry.

4 REQUIREMENTS

4.1 The tamarind kernel powder shall meet the physical requirements for Grades 1 and 2 respectively as given in Table 1.

4.1.1 The tamarind kernel powder shall be free from larvae, insects and sub-standard starches also.

4.2 The tamarind kernel powder, both Grade 1 and 2 shall also meet the chemical requirements given in Table 2.

4.2.1 If the original test specimens are analyzed as such in order to eliminate the time-consuming oven drying, the observed mass shall be corrected for moisture content while calculating the results.

5 PACKING

The tamarind kernel powder, being hygroscopic in nature, shall be packed in polyethylene lined woven sack conforming to IS 12100 or polypropylene lined nonwoven bags conforming to IS 17279 or any other packing material as agreed between the buyer and seller.

6 MARKING

6.1 Each package shall be legiblv marked with the following information:

a) Name and grade of the material;
b) Net weight;
c) Lot and batch number;
d) Month and year of manufacture;
e) Manufacturer's name, initials or trade-mark, if any; and
f) Any other information required by the law in force.

Table 1 Physical Requirement of Tamarind Kernel Powder

(*Clause* 4.1)

Sl No.	**Characteristic**	**Requirement**		**Method of Test, Ref to**
		Grade 1	Grade 2	
(1)	(2)	(3)	(4)	(5)
i)	Odour	---- Not disagreeable or rancid ----		Olfactory
ii)	Colour	Cream to cream white	Light cream to light yellow	Visual
iii)	Testa content, Percent, *Max*	1	3	B-1
iv)	Particle size (fineness)			**3** of IS 4706 (Part 1)
	a) 100 percent shall pass through	180 micron IS Sieve	425 micron IS Sieve	
	b) 80 percent shall pass through	150 micron IS Sieve	300 micron IS Sieve	
v)	Viscosity at 90°C			
	a) By Redwood Viscometer No. 1, *Min* (*see* NOTE)	55 second	55 second	**5** of IS 4706 (Part 1)
	b) By Brookfield Method	1 000 cP	1 000 cP	B-2

NOTE — When Redwood viscometer No. 1 is used for determination of viscosity the following method for preparation of paste shall be followed:

Weigh 3.0 g of the dry material. Add this to a beaker containing 200 ml water, with continuous stirring. Weigh the beaker and the stirrer along with its contents. Keep the beaker in a boiling waterbath and cover with a plastic plate. Stir this with the paddle type mechanical stirrer at a speed of 45 to 50 rev per min. After one and a half hours weigh the contents along with the stirrer. Add sufficient water to compensate for the loss of water during cooking. Cook it for another 10 minutes and determine the viscosity of the paste at 90ºC.

Table 2 Chemical Requirement of Tamarind Kernel Powder

(*Clause* 4.2)

Sl No. (1)	**Characteristic** (2)	**Requirement** (3)	**Method of Test, Ref to** (4)
i)	Moisture content, Percent, *Max*	13	**4** of IS 4706 (Part 2)
ii)	Crude fibre, Percent, *Max*	1	**12** of IS 4706 (Part 2)
iii)	Total ash, Percent, *Max*	3	**5** of IS 4706 (Part 2)
iv)	pH, *Min*	4.5	**13** of IS 4706 (Part 2)

6.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the product(s) may be marked with the Standard Mark.

7 SAMPLING

Representative samples of the material for ascertaining conformity to the requirements of this standard shall be drawn according to the method given in **2.1** and **2.2** of IS 4662 unless otherwise specified in the contract.

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No	*Title*
4662 : 1977	Methods for sampling of starches and starch products (*first revision*)
4706(Part 1) : 1978	Methods of test for edible starches and starch products Physical methods (*first revision*)
(Part 2) : 1978	Chemical methods (*first revision*)
12100 : 1987	Specification for high density polyethylene (HDPE) woven sacks for packing flour
17279 : 2019	Textiles – Polypropylene (PP) nonwoven sacks for packing bulk commodities – Specification

ANNEX B

(*Table* 1)

METHODS OF TEST

B-1 TEST FOR TESTA CONTENT

B-1.1 Testa content of the sample may be determined by either of the two methods prescribed under **B-1.2** and **B-1.3**.

B-1.2 Iron Filing Method

B-1.2.1 *Preparation of the Paste* — Make a creamy paste with 3 g (oven dry basis) of the sample and a small quantity of water avoiding the formation of lumps and clots. Heat and stir the slurry in boiling water for two and a half hours. Cool the paste, strain through fine muslin (10 tex warp — 28 ends per cm, 7.5 tex weft — 21 picks per cm) and make up the volume to 200 ml thus making a 1.5 percent paste.

B-1.2.2 *Procedure* — Put 15 ml of the paste, prepared as under **B-1.2.1** in a test tube and add 1.5 g of clean iron filings. Lightly stopper the tube to minimize evaporation and keep it in a boiling water bath for 30 minutes with occasional stirring and, after the expiry of this period, take it out and examine the colour of the paste against similar pastes containing known percentages of testa.

NOTE — The colour of the resulting paste varies according to the testa content of tamarind kernel powder (TKP). When the testa content is below 1 percent, no perceptible darkening of the paste takes place. But with 1.5 to 2 percent testa, the colour becomes light blue, with about 3 percent moderately deep blue and when it is above 5 percent, dark blue.

B-1.3 Direct Colour Comparison Method — Put 10 g dried sample into an evaporating basin of suitable capacity and macerate it with 50 ml of 80 percent alcohol, so that the testa and the extractable dye are suitably distributed. Heat the mixture on a water bath till it is dry. Scrape the residue out of the basin, dry it further at 110°C for 10 minutes and powder it to a fineness that it passes through 250 microns IS sieve or its equivalent standard sieve. Examine the powder under the Lovibond Tintometer (see Notes), comparing its colour against the standard white. If the yellow and the red readings are found to be below 1.3 and 1.7 respectively, without requiring any appreciable amount of blue, the testa content of the powder shall be held not to exceed 3 percent.

NOTES

1 The variation in the colour values of TKP with different percentages of testa is as follows:

Testa Content	*Tintometer Readings*		
Percent	Yellow	Red	Blue
-	0.5	0.3	-
1	1.1	1.2	0.2
2	1.2	1.5	0.3
3	1.3	1.7	0.3
4	1.5	1.9	0.3
5	1.6	2.1	0.3

2 In place of tintometer, suitable colour measuring spectrophotometer may also be used after proper calibration.

B-2 METHOD OF DETERMINATION OF VISCOSITY BY BROOKFIELD VISCOMETER

B-2.1 Add 6 g of the material (oven-dry basis) to 200 ml of water with continuous stirring. Cook the slurry for 1 hour in boiling water bath. Add requisite amount of water to compensate loss due to water evaporation. Cool the paste to 30°C with stirring and determine the viscosity on Brookfield viscometer using LV-2 spindle at a speed of 30 rev/min.

ANNEX C

(*Foreword*)

COMMITTEE COMPOSITION

Textile Speciality Chemicals and Dyestuffs Sectional Committee, TXD 07

Organization	*Representative(s)*
Department for Jute and Fibre Technology Institute of Jute Technology, University of Calcutta, Kolkata	Prof A K Samanta (***Chairman***)
Ahmedabad Textile Industry's Research Association,	Shrimati Deepali Plawat Shrimati Fahimunnisa Khatib (*Alternate*)
Ama Herbals Laboratories Pvt Ltd, Lucknow	Shri Y A Shah
Archroma India Pvt Limited, Mumbai	Shri Rajesh Ramamurthy Shri Ashim Ghosh (*Alternate*)
Atul Limited (Colors Business), Valsad	Shri V R Sai Ganesh Shri Arindam Chakraborty (*Alternate*)
Bio Dyes India Pvt Ltd, Goa	Dr Bosco Henriques
Central Coir Research Institute, Alappuzha	Shrimati Anita Jacob Shrimati Sumi Sabestian (*Alternate*)
ICAR – Central Institute for Research on Cotton Technology, Mumbai	Dr Sujata Saxena Dr A S M Raja (*Alternate*)
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Global Organic Textile Standard, (GOTS), Thane	Shri Rahul Bhajekar Ms Prachi Gupta (*Alternate*)
Indian Jute Industries Research Association, Kolkata	Dr S K Chakrabarti Shri Sandip Basu (*Alternate*)
Northern India Textile Research Association, Ghaziabad	Dr M S Parmar
Office of the Textile Commissioner, Mumbai	Shri Gaurav Gupta Shri Sanjay Charak (*Alternate*)
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Shree Pushkar Chemicals & Fertilizers Ltd, Mumbai	Dr N N Mahapatra
Textiles Committee, Mumbai	Shri Kartikeya Dhanda Shrimati Shilpi Chauhan (*Alternate*)

Organization	*Representative(s)*
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U P Textile Technology Institute, Kanpur	DR ARUN PATRA
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Member Secretary
SHRI HIMANSHU SHUKLA
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Review of Indian Standards

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